

What is claimed is:

[Claim 1] 1. A spray applicator for spraying a reaction mixture, comprising:
a dispensing head in fluid flow communication with a plurality of material sources that each contain a material to be dispensed and having a control fluid circuit, the dispensing head having a mixing chamber and an outlet;
a valve plate disposed in the dispensing head, the valve plate having a plurality of channels, wherein each of the material sources is in fluid flow communication with a supply channel, each of the supply channels having a valve seat;
a plurality of rotatable valve elements, wherein one of the valve elements is disposed in each of the valve seats, a first group of the valve elements having a material dispensing port that has a dispensing position in which material is dispensed into the mixing chamber and a recirculating position in which material is recirculated, at least one of a second group of the valve elements having a dispensing position in which material is dispensed into the mixing chamber and a shutoff position; and that is operatively connected to the control fluid circuit at a first port and a second port; and
wherein the control fluid circuit is connected to a plurality of actuators, wherein each of the valve elements has one actuator port and a second port, the control fluid circuit selectively pressurizes either the first port or the second port to arcuately shift one or more of the first plurality of valve elements between the dispensing position and the recirculating position and to arcuately shift the second group between the dispensing position and the shutoff position, wherein when the valve elements are in their dispensing position the material in the one material source to which its associated supply channel is connected is provided to the mixing chamber and then to the outlet.

[Claim 2] 2. The spray applicator of claim 1 wherein the first group of valve elements are used to dispense materials to be deposited by the spray applicator.

[Claim 3] 3. The spray applicator of claim 1 wherein a first one of the first group of valve elements dispenses isocyanate and a second one of the first group of valve elements dispenses polyol.

[Claim 4] 4. The spray applicator of claim 1 wherein one of the first group of valve elements dispenses a colorant.

[Claim 5] 5. The spray applicator of claim 1 wherein one of the first group of valve elements dispenses a texture modifier.

[Claim 6] 6. The spray applicator of claim 1 wherein the second group of valve elements dispenses a purge material.

[Claim 7] 7. The spray applicator of claim 1 wherein one of the second group of valve elements dispenses a solvent.

[Claim 8] 8. The spray applicator of claim 1 wherein one of the second group of valve elements dispenses compressed air.

[Claim 9] 9. The spray applicator of claim 1 wherein the control fluid circuit is a pneumatic fluid circuit.

[Claim 10] 10. The spray applicator of claim 1 wherein the rotatable valve elements each further comprise a cylindrical member disposed in a tubular sleeve, the tubular sleeve being affixed to the valve plate and the rotatable valve elements being arcuately rotated within the sleeves by the control fluid selectively pressurizing the first port or the second port of one or more of the valve elements to cause selected ones of either the first group of valve elements or the second group of valve elements to dispense material into the mixing chamber.

[Claim 11] 11. The spray applicator of claim 10 wherein the first group of valve elements each dispense one of a polyol component, an isocyanate component, a colorant component, and a texture modifying component.

[Claim 12] 12. The spray applicator of claim 10 wherein the second plurality of valve elements each dispense one of a solvent and a compressed gas.

[Claim 13] 13. A spray applicator for spraying a reaction mixture, comprising:
a dispensing head in fluid flow communication with a plurality of material sources each containing a material to be dispensed, the dispensing head having a mixing chamber and an outlet;
a valve plate disposed in the dispensing head, the valve plate having a plurality of channels, wherein each of the material sources is in fluid flow communication with at least one of the channels;

a plurality of valve elements, wherein a first group of the valve elements used to dispense one material to be deposited by the spray applicator, the first group of valve elements each having a material dispensing port that has a dispensing position and a recirculating position, wherein a first one of the first group of valve elements dispenses isocyanate, a second one of the first group of valve elements dispenses polyol, a third one of the first group of valve elements dispenses a colorant, and a fourth one of the first group of valve elements dispenses a texture modifier, and wherein a second group of the valve elements dispenses one material into the mixing chamber, the second group of valve elements having a dispensing position and a shutoff position, wherein a first one of the second group of valve elements dispenses a solvent, and a second one of the second group of valve elements dispenses compressed air; and

a pneumatic control fluid circuit operatively connected to each of the valve elements that selectively pressurizes either a first port or a second port of each valve element to arcuately shift one or more of the first group of valve elements between the dispensing position and the recirculating position and to arcuately shift the second group of valve elements between the dispensing position and the shutoff position, wherein when the valve elements are in their dispensing position the material is dispensed into the mixing chamber and to the outlet.

[Claim 14] 14. The spray applicator of claim 13 wherein the valve elements each have a cylindrical member and a tubular sleeve, the tubular sleeve being affixed to the valve plate and the cylindrical member being arcuately rotated within the sleeve by the control fluid that selectively pressures the first port or the second port of one or more of the valve elements to cause selected ones of either the first plurality of valve elements or the second group of valve elements to dispense the material that is provided to the valve elements by the channel in which the valve elements are disposed.